

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
 (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P2449PC00-J00	FOR FURTHER ACTION	
See Form PCT/IPEA/416		
International application No. PCT/NO 03/00254	International filing date (day/month/year) 23.07.2003	Priority date (day/month/year) 14.04.2003
International Patent Classification (IPC) or national classification and IPC F25D17/02		
Applicant UTSTYR & KJOLESERVICE AS et al.		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 3 sheets, as follows:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application

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International application No.
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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3 and 23.1(b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements* of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

Description, Pages

1-11 as originally filed

Claims, Numbers

1-18 received on 11.04.2005 with letter of 08.04.2005

Drawings, Sheets

1/2-22 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. The amendments have resulted in the cancellation of:
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (specify):
 - any table(s) related to sequence listing (specify):
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (specify):
 - any table(s) related to sequence listing (specify):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-18
	No: Claims	
Inventive step (IS)	Yes: Claims	1-18
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-18
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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Separate Sheet

Section V

The feature in claims 2, 3 and 11 of a "skimmer construction" and that in claim 10 of an ice slurry "collecting means" have not been revealed in this form in the application as filed (see section VIII herewith). The examination of these claims will be undertaken in the following based on the assumption that the feature of the overflow funnel or trough (58) has been used place of the above offending expressions.

- 1) None of the available prior art documents reveals or suggests the combination of the features of claim 1 of pumping the slurry with great force into the tank through injection nozzles and circulating the slurry by extracting it from an upper ice slurry level and re-injecting it into the tank. Further, these features offer the advantage of an improved circulation of slurry within the tank resulting in improved cooling of the packaged product units.

Hence, claim 1 meets the requirements of Articles 33(2) and (3) PCT.

- 2) Dependent claims 2 to 9 are directed to further developments of the inventive idea of claim 1. These claims also meet the requirements of Articles 33(2) and (3) PCT for the reasons given for claim 1.
- 3) Independent apparatus claim 10 contains the features of an overflow funnel together with injection nozzles and a recirculation pump means. Hence, the apparatus of claim 10 is suited for carrying out the method of claim 1 and meets the requirements of Articles 33(2) and (3) PCT for the reasons given for claim 1.
- 4) Dependent claims 11 to 18 are directed to further developments of the inventive idea of claim 10. These claims also meet the requirements of Articles 33(2) and (3) PCT for the reasons given for claim 10.

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Section VIII

- 1) The application has been extended in scope and does not meet the requirements of Article 19(2) PCT for the following reasons:
 - a) The feature in claims 2, 3 and 11 of a "skimmer construction" and that in claim 10 of an ice slurry "collecting means" have not been revealed in this form in the application as filed. In the application as filed, the only feature revealed for collecting ice slurry was that of an overflow trough or funnel (58) - see, for example paragraph 3 on page 4 and figure 2. In paragraph 1 of page 5, it is mentioned that the ice/water is "skimmed off" from the upper part of the tank but this skimming off is carried out by the overflow funnel (58) in conjunction with the circulation of the slurry aided by the pump (56). No other skimmer construction has been revealed or alluded to and hence a generalisation of this feature is not justified.
 - b) Claim 7 defines the ice slurry as having a ratio of ice particles of 25% and with a temperature of -2.5°C. This feature is based on claim 5 as filed. However, claim 5 defined the slurry as having 2% weight NaCl (which is necessary in order that its temperature is under 0°C). There is no justification for the removal of this feature. Further, the expression "by weight" has been omitted after "25%". Again, there is no justification for this removal.
 - c) In claim 1 the expression "great force" is used. This expression is based on page 4 of the description, which uses the term "significant force". Although both terms are rather vague, the original expression should have been used.
- 2) The description should have been adapted to suit the new claims and the documents D1 to D3 cited.

The industrial applicability of the method and apparatus is obvious.

PATENT CLAIMS

1. Method for cooling of a number of packaged product units in a treatment tank (50), in which the product units are submerged in a coolant in the form of a mixture of ice and water to bring about the cooling, characterised in that an ice slurry mixture of water and ice particles is circulated around the product units by pumping the slurry with a great force into the tank through injection nozzles (60,62,64) of a pumping plant (56), and
10 the ice slurry is circulated by extracting from an upper ice slurry level of the tank (50) and re-injecting into the tank.
2. Method according to claims 1, characterised in that the ice slurry is extracted by using a skimmer construction (58) of the tank (50).
- 15 3. Method according to any claims 1-2, characterised in that the skimmer construction (58) extracts an overflow ice slurry mixture from the tank (50).
4. Method according to any of the preceding claims, characterised in that the ice slurry is injected at varying angles into the tank, such as horizontal or vertical angle, or at any other angle required for individual utilisation.
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5. Method according to any of the preceding claims, characterised in using a pumping plant (56) of 3 injection nozzles (60,62,64).
- 25 6. Method according to any of the preceding claims, characterised in that as the volume of ice particles in the slurry approaches a defined lower level, water from the bottom of the tank (50) is fed from the tank and back to a supply tank (20) in which ice slurry is prepared, while a fresh portion of ice slurry is returned to the tank (50).
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7. Method according to any of the preceding claims, characterised in that an ice slurry is utilised in which the ratio of ice particles is 25% and with a temperature of -2.5°C.

8. Method according to any of the preceding claims, characterised in that the water is a saline brine of approx. 2% in the form of a mixture of salt dissolved in fresh water, as the water is mixed with ice particles to form an ice slurry with the consistency required to allow for pumping.

9. Method according to any of the preceding claims, characterised in that the salt water/brine consists of approx. 25 weight % ice crystals, 2 weight % NaCl (cooking salt) and the rest fresh water, whereby the saline solution allows for the water temperature in the actual ice slurry to be reduced to approx. -2.5°C without the water freezing.

10. Apparatus for cooling of packaged product units in a treatment tank (50), said tank being arranged for containing a coolant of an ice slurry mixture in which the product units may be submerged, characterised in that the upper part of the tank (50) comprises an ice slurry collecting means (58) being connected with a number of ejection nozzles (60,62,64) by means of a pipe (52) with a connected pump means (56), for conducting a recirculation of ice slurry extracted from the upper part of the tank.

11. Apparatus according to claim 10, characterised in that the collecting means (58) comprises a skimmer or funnel construction (58) to collect/extract an overflow ice slurry mixture from the tank (50).

12. Apparatus according to any of claims 10-11, characterised in three ejection nozzles (60,62,64) for ejection of ice sludge in the tank (50).

13. Apparatus according to any of claims claim 10-12, characterised in that the ejection nozzles (60,62,64) are set at varying angles, such as horizontally or vertically, or at any other angle required for individual utilisation.

14. Apparatus according to any of claims claim 10-13, characterised in that the tank (50) is connected with a supply tank (20) in which a fresh ice slurry is prepared.

15. Apparatus according to any of the claims 10-14, characterised by transport means, such as a conveyor belt, for continual transport of a set or a number of product units into and out of the treatment tank (50) for cooling with ice slurry for the required period of time.

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17. Application of method and system according to the preceding claims for treatment of vacuum packed products, especially food stuff.

10 18. Application of method and system according to the preceding claims whereby a large number of vacuum bags are treated hanging side by side on a rack, and which have just been through a process of heat treatment in an oven, after which the rack with the bags is transported to the cooling tub and totally submerged in the cooling slurry tank for cooling for the required period of time.